

Fate Report for Case # P-18-0261

Fate

Summary Statement

Fate P-18-0261

Summary FATE:

Statement:

S =

Reacts

Hydrolysis half-life = wk

VP < 1.0E-6 torr at 25 °C

(E)

BP > 400 °C (E)

H < 1.00E-8 (E)

POTW removal (%) = PMN

90 via sorption and hydrolysis; then Hyd Pdt 90 via

sorption and biodeg; Hyd Pdt 90 via sorption.

Time for

complete ultimate aerobic biodeg = PMN mo; Hyd Pdt wk;

Hyd Pdt > mo

Sorption to soils/sediments = PMN strong;

Hyd Pdt strong;

Hyd Pdt strong

PBT

Potential: PMN P1-2B1; Hyd Pdt P2B1; Hyd Pdt

P3B*(low)

*CEB FATE: Migration to ground water = PMN slow; Hyd Pdt

slow;

Hyd Pdt slow

PMN

Material:

Overall wastewater treatment removal is 90% via sorption and slow hydrolysis (hydrolysis half-life: weeks).

Sorption to sludge is

strong based on data for large molecular weight polymers.

Air Stripping

(Volatilization to air) is negligible based on data for large molecular weight polymers.

Removal by biodegradation in wastewater treatment is

negligible based on data for large molecular weight polymers.

The

aerobic aquatic biodegradation half-life is weeks to greater than months based on data for large molecular weight polymers.

The anaerobic aquatic biodegradation half-life is weeks to greater than months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater than or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on data for large molecular weight polymers.

Migration to groundwater is slow based on data for large molecular weight polymers.

PMN Material:

Low to Moderate Persistence (P1-2) is based on the slow hydrolysis (hydrolysis half-life: weeks) and data for large molecular weight polymers.

Low Bioaccumulation potential (B1) is based on the slow hydrolysis (hydrolysis half-life: weeks).

Hydrolysis Product

(██████████)

Overall wastewater treatment removal is 90% via biodegradation.

Sorption to sludge is strong based on data for ██████████ and similar cases of ██████████ degradants.

Air Stripping

(Volatilization to air) is negligible based on data for ██████████ and similar cases of ██████████ degradants.

Removal by biodegradation

in wastewater treatment is high based on data for ██████████ and similar cases of ██████████ degradants.

The aerobic aquatic biodegradation

half-life is weeks based on data for ██████████ and similar cases of ██████████ degradants.

The anaerobic aquatic biodegradation

half-life is months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on data for ██████████ and similar cases of ██████████ degradants.

Migration to

groundwater is slow based on data for ██████████ and similar cases of ██████████ degradants.

Hydrolysis Product (██████████)

██████████

Moderate Persistence (P2) is based on the estimated anaerobic

biodegradation half-life and data for [REDACTED]

Low

Bioaccumulation potential (B1) is based on data for [REDACTED] in addition to metabolism.

Hydrolysis Product ([REDACTED])

Overall wastewater treatment removal is 90% via sorption.

Sorption to sludge is strong based on data for metal oxides

Air

Stripping (Volatilization to air) is negligible based on data for metal oxides

Removal by biodegradation in wastewater treatment is negligible based on data for metal oxides

The aerobic aquatic biodegradation

half-life is greater than months based on data for metal oxides

The

anaerobic aquatic biodegradation half-life is greater than months based on the aerobic biodegradation half-life. The anaerobic biodegradation half-life is projected to be greater or equal to the aerobic biodegradation half-life.

Sorption to soil and sediment is strong based on data for metal oxides

Migration to groundwater is slow based on data for metal oxides

Hydrolysis Product ([REDACTED])

High Persistence (P3) is based

on the estimated anaerobic biodegradation half-life and data for metal oxides.

Bioaccumulation potential (B*-low) is based on data for metal oxides. The substance does not fit in the standard framework of the model.

Bioconcentration/Bioaccumulation factor to be put into E-Fast: N/A.

[REDACTED]
Fate Wong, Edmund

Assessor:

SMILES: [REDACTED]

Physical Properties

Property	Measured/Calculated Value	EPI
Molecular Form:		
Molecular Wt.:		
% < 500:		
% < 1000:		

Property	Measured Value	Method	Estimated Value	Method	EPI
Melting Point:					
Boiling Point:					
BP Pressure:					
Vapor Pressure:			<0.000001		
Water Solubility:			<0.000001/Reacts		
Log P:					
Log Kow:					
Log Koc:					
Log BCF:					
Henry's Law:					

pH:	
pH	
Comment:	

Fate Analysis

Hydrolysis (t1/2, da):	Volatilization (t1/2) - River (hr):	Volatilization (t1/2) - Lake (da):
Atm Ox Potential (t1/2)OH (hr):	Atm Ox Potential (t1/2)O3 (hr):	Atm Ox Potential (t1/2) Total (hr):

MITI Linear:	MITI
	NonLinear:
Biodeg Linear:	Biodeg
	NonLinear:
Biodeg Survey	Biodeg Survey
ult:	Prim:
STP (% removal)	STP (% removal)
Total:	Biodeg:
STP (% removal)	STP (% removal)
Ads:	Air:

Rationales

Removal in Wastewater Treatment: Atmospheric Oxidation: Hydrolysis: Photolysis: Aerobic Biodegradation: Anaerobic Biodegradation: Sorption to Soil and Sediment: Migration to Groundwater: Persistence - Air: Persistence - Water: Volatilization from Water: Soil: Sediment: Other: Standard: Bioaccumulation:
--

PBT Ratings

Persistence	Bioaccumulation	Toxicity	PBT Comments
1-2	1		PMN

Persistence	Bioaccumulation	Toxicity	PBT Comments
2	1		Hyd Pdt [REDACTED]
3	*		Hyd Pdt [REDACTED] B*(low)

Exposure-Based Testing

Exposure-Based Testing:

Fate Ratings

Removal in WWT/POTW

(Overall):

Removal in 90;90;90 PMN;Hyd Pdt [REDACTED] Hyd Pdt [REDACTED] WWT/POTW [REDACTED] (Overall):
--

Condition	Rating Values	Rating Description				Comment
		1	2	3	4	
WWT/POTW Sorption:	3;3;3	Low	Moderate	Strong	V. Strong	PMN;Hyd Pdt [REDACTED] [REDACTED] Hyd Pdt [REDACTED] [REDACTED]
WWT/POTW Stripping:	4;4;4	Extensive	Moderate	Low	Negligible	PMN;Hyd Pdt [REDACTED] [REDACTED] Hyd Pdt [REDACTED] [REDACTED]
Biodegradation Removal:	4;2;4	Unknown	High	Moderate	Negligible	PMN;Hyd Pdt [REDACTED] [REDACTED] Hyd Pdt [REDACTED] [REDACTED]
Biodegradation Destruction:		Unknown	Complete	Partial	—	
Aerobic Biodeg Ult:	3;2;4	<= Days	Weeks	Months	> Months	PMN;Hyd Pdt [REDACTED] [REDACTED] Hyd Pdt [REDACTED] [REDACTED]

Condition	Rating Values	Rating Description				Comment
		1	2	3	4	
Aerobic Biodeg Prim:		<= Days	Weeks	Months	> Months	
Anaerobic Biodeg Ult:	3;3;4	<= Days	Weeks	Months	> Months	PMN;Hyd Pdt [REDACTED] Hyd Pdt [REDACTED]
Anaerobic Biodeg Prim:		<= Days	Weeks	Months	> Months	
Hydrolysis (t1/2 at pH 7,25C) A:	3.5	<= Minutes	Hours	Days	>= Months	[REDACTED]
Hydrolysis (t1/2 at pH 7,25C) B:		<= Minutes	Hours	Days	>= Months	
Sorption to Soils/Sediments:	2;2;2	V. Strong	Strong	Moderate	Low	PMN;Hyd Pdt [REDACTED] Hyd Pdt [REDACTED]
Migration to Ground Water:	2;2;2	Negligible	Slow	Moderate	Rapid	PMN;Hyd Pdt [REDACTED] Hyd Pdt [REDACTED]
Photolysis A, Direct:		Negligible	Slow	Moderate	Rapid	
Photolysis B, Indirect:		Negligible	Slow	Moderate	Rapid	
Atmospheric Ox A, OH:		Negligible	Slow	Moderate	Rapid	
Atmospheric Ox B, O3:		Negligible	Slow	Moderate	Rapid	

Bio

Comments:

Bio The PMN material may react with water (weeks) to produce [REDACTED] and leaving [REDACTED] groups in the polymer. Hydrolysis will be inhibited due to low water solubility but acid/basic conditions may increase the rate of hydrolysis.

Fate
Comments:

Fate Comments:

Comments/Telephone
Log

Artifact	Update/Upload Time